In the claims:

1. (currently amended) A method of transmitting optical signals in an oilfield operation, comprising:

(a) providing a first optical fiber at least partially in a wellbore, the first optical fiber having a plurality of spaced apart sections doped with a material that acts as an optical amplifier upon supply of optical energy thereto;

(b) providing a second optical fiber adjacent the first optical fiber and coupling the second optical fiber to each of the plurality of spaced apart doped sections; and

(c) pumping optical energy from a remote source through said second optical fiber to each of said plurality of doped sections in said first optical fiber to amplify optical signals passing through said first optical fiber.

2. (original) The method of claim 1 further comprising encapsulating each of the plurality of doped sections and the corresponding coupling between the first and the second optical fibers.

3. (original) The method of claim 1 further comprising enclosing the first and the second fiber in a protective enclosure.

4. (original) The method of claim 3 wherein the enclosure is a tubing.

5. (original) The method of claim 4 wherein the tubing is one of a (i) polyurethane (ii) steel; or (iii) a composite material.

6. (original) The method of claim 1 further comprising introducing optical signals to be transmitted into the first fiber.

7. (original) The method of claim 1 further comprising coupling at least one sensor to the first optical fiber.

8. (original) The method of claim 1 further comprising coupling a plurality of distributed optical sensors to the first fiber.

9. (original) The method of claim 7 wherein said at least one sensor is selected from a group consisting of (i) a temperature sensor; (ii) a pressure sensor; (ii) a flow measurement sensor; (iv) a sensor for determining a chemical characteristic of a fluid; and (v) a sensor for determining a physical characteristic of a fluid.

10. (cancelled)

11. (currently amended) The fiber optic signal carrier of claim ~~10~~ 19 further comprising an enclosure enclosing the first and the second optical fibers.

12. (currently amended) The fiber optic signal carrier of claim ~~10~~ 19 wherein the at least one doped section comprises a plurality of doped sections and each of the plurality of doped sections includes a separate optical coupling between the second optical fiber and each of said plurality of doped sections in said first optical fiber.

13. (original) The fiber optic signal carrier of claim 12 wherein each of the plurality of doped sections and the corresponding optical coupling are encapsulated.

14. (cancelled)

15. (cancelled)

16. (currently amended) The fiber optic signal carrier of claim ~~10~~ 19 further comprising a third optical fiber having a plurality of doped sections and placed alongside of the first and second optical fibers for carrying signals in a direction opposite of a direction of signals carried by the first optical fiber.

17. (currently amended) The fiber optic signal carrier of claim 16 further comprising an optical coupler between the second optical fiber and each of the plurality of doped sections of the third optical fiber.

18. (cancelled)

19. (currently amended) A system of transmitting optical signals during an ~~subsea~~ oilfield operation[s] comprising:

(a) a fiber optical signal carrier extending ~~under-water~~ at least partially into a wellbore, said fiber optical signal carrier ~~including~~ comprising:

(i) a first optical fiber having at least one doped section that acts as an amplifier to optical signals passing there through when said doped section is supplied with optical energy;

(ii) a second optical fiber disposed alongside the first optical fiber for carrying optical energy;

(iii) an optical coupler between the second optical fiber and the at least one doped section for supplying optical energy from the second optical fiber to the first optical fiber;

(b) at least one optical signal traveling in the first optical fiber; and

(c) an optical energy source supplying optical energy to the second optical fiber.

20. (original) The system of claim 19 wherein the optical energy source is located remotely from said doped section.

21. (currently amended) The system of claim 19 wherein the ~~optical signal carrier is disposed in part in a~~ wellbore comprises a subsea wellbore.

22. (cancelled)

23. (original) The system of claim 19 wherein the at least one optical signal is at least one of (i) a sensor signal and (ii) a communication signal.

24. (original) The system of claim 23 wherein the sensor signal is generated from at least one sensor optically coupled to said first optical fiber.

25. (original) The system of claim 24 wherein the sensor is one of (i) a pressure sensor; (ii) a temperature sensor; (iii) a flow measurement sensor; and (iv) a sensor providing a measure of a characteristic of a fluid.

26. (original) A fiber optic signal carrier, comprising:

a. a first optical fiber carrying a first optical signal in a first direction, said first optical fiber having a plurality of spaced apart first doped sections, said first doped sections having a material that amplifies optical signals passing therethrough upon supply of optical energy to said plurality of first doped sections;

b. a second optical fiber adjacent said first optical fiber and carrying a second optical signal in a second direction, said second optical fiber having a plurality of spaced apart second doped sections, said second doped sections having a

material that amplifies optical signals passing therethrough upon supply of optical energy to said plurality of second doped sections; and

c. an optical pumping fiber adjacent said first optical fiber and said second optical fiber, said optical pumping fiber optically coupled to each of said plurality of first doped sections and second doped sections for supplying optical power to said doped sections thereby amplifying said first optical signal and said second optical signal.

27. (new) A system of transmitting optical signals during a piping operation comprising:

a. a fiber optical signal carrier extending at least partially into a pipeline carrying fluids, said fiber optical signal carrier comprising:

(j) a first optical fiber having a least one doped section that acts as an amplifier to optical signals passing there through when said doped section is supplied with optical energy;

(ii) a second optical fiber disposed alongside the first optical fiber for carrying optical energy;

(iii) an optical coupler between the second optical fiber and the at least one doped section for supplying optical energy from the second optical fiber to the first optical fiber;

b. at least one optical signal traveling in the first optical fiber; and

c. an optical energy source supplying optical energy to the second optical fiber.

28. (new) The method of claim 1, wherein the wellbore comprises a subsea wellbore.

29.(new) A method of transmitting optical signals in a piping operation, comprising:

a. providing a first optical fiber at least partially in a pipeline, the first optical fiber having a plurality of spaced apart sections doped with a material that acts as an optical amplifier upon supply of optical energy thereto;

b. providing a second optical fiber adjacent the first optical fiber and coupling the second optical fiber to each of the plurality of spaced apart doped sections; and

c. pumping optical energy from a remote source through said second optical fiber to each of said plurality of doped sections in said first optical fiber to amplify optical signals passing through said first optical fiber.

30.(new) The method of claim 29, wherein the pipeline comprises a subsea pipeline.